

Lesson: 5**Title:** Human Box Plot**Course and Grade:** Algebra 1, 9-10th (Primarily 9th)**Lesson Duration:** 55 Minutes*I. First Step: Choosing Why, What, How Much, and How***a. Focus & Purpose:**

Focus: The main idea of this lesson is for students to use their birthday month data and represent a human box plot by working together communicating as a class.

Purpose: This lesson is relevant to my students because students will problem solve by socializing via a discussion to, devise a plan to construct a human box plot, implement that plan creating a human box plot, and reflecting on the activity.

b. Learning Targets:

CCSS.Math.Content.HSS-ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

1. Students will be able to complete the five number summary given a data set and represent that data on a box plot (Skill).
2. Students will understand the following terms; five number summary, box plot, minimum, maximum, first quartile, third quartile, and median of a given data set. (Concept).
3. Students will demonstrate the ability to work cooperatively in groups by taking turns speaking, offering positive encouragement to other group members, and reaching a consensus on the story problem (practiced skill).

c. Development of Assessments

1. LT1- I will know that my students have met learning target one when I hear students discuss, devise, and plan how to represent the 5 five number summary and a human box plot during the class discussion.

LT-2 I will know that my students have met learning target two when I hear students discuss the following terms during the discussion and human box plot activity: five number summary, 1st quartile, 3rd quartile, minimum, maximum, median and box plot.

LT-3 I will know students have successfully met learning target three when students are taking turns speaking, offering positive encouragement to other group members, and have reached a consensus how to create a human box plot.

2. LT-1 For learning target one I will use performance as a means of assessment. I will know students have met learning target one when they correctly complete the human box plot group activity with little to no errors.

LT-2 For learning target two, I will use personal communication as a means of assessment. I will know that students have met learning target two when students can explain the following terms on their human box plot; practice; 1st quartile, 3rd quartile, minimum, maximum, median, five number summary, and box plot.

LT-3 For learning target three, I will use personal communication for assessment. I will know that students have met learning target three when students answer the following question?

1. How can working and communicating with your peers be beneficial outside of math class?

d. Selection of Instructional Strategies

1. I choose a cooperative lesson with elements of inquiry because students will engage in a structured discussion with a given group task to accomplish. Students will discuss the Human Box Plot activity, create a plan to complete the activity, implement the activity and reflect on the activity. This lesson is relevant to my students because it brings collaboration and communication to the math classroom while striving for Common Core standard HSS-ID.A.1. I want students to apply what they have learned so far in this unit on interpreting data by collaborating with classmates and coming to a consensus to represent their birthday data.

e. Supports for Diverse Students Needs

Being a review lesson before the learning segments test, many of the supports for diverse students needs are in place. Throughout the learning segment I have purposely encouraged dialogue to prepare for this lesson. This lesson requires participation from all students, so students will support students in learning. Over the course of the learning segment, we have created and added to the word wall, filled the word wall, and practiced discourse. This cooperative lesson is intended for students to support each other in learning.

Discourse

Craft Whole Class Discussions

Challenge students to think about their own ideas, defend them, modify and articulate them in real time (Zwiers, 2008). This tends to mirror what often happens in the real world; in business, institutions, and politics. Below are some keys to facilitate effective classroom discussions.

- Early on we need to cultivate a positive, receptive classroom environment
- Predict and plan for possible tangents, elaborations, and connections to student lives
- Explore ideas rather than regurgitate answers
- Train students to ask questions when they misunderstand
- Teach nonverbal responses and facial expressions

Syntax

1. *Three Column Note Graphic Organizer*
2. *Word Wall*
3. *Lector Notes*

II. Second Step: Making the Specific Plan

a. Preparation:

Materials: Paper, pencil, whiteboard, dry erase marker, iPad/iPhone/computer, Apple TV/HDMI cord, dot cam, projector, 8' 2X4, rope.

b. Procedure:

1. Context

"Today we are going to continue working with box plots. Today is different though. I will present a task that everyone in this classroom must participate in order for success. Today, I am creating a competition amongst all four Algebra classes, seeing which class can record the fastest time of representing a box plot. The class with the fastest time gets the first choice of snacks provided. The key to recording the fastest time to today's challenge is effective communication and collaboration amongst your peers. I'm going to give you time to discuss the activity, and devise a plan to complete the task that all algebra classes will work to achieve."

2. Purpose

"The purpose of today's lesson is to improve two different skills. One skill is aligned with Common Core standard HSS.ID.A.1, represent data with plots on the real number line. The other skill is learning to communicate effectively and collaborate as a group. Today you will work with real data relevant to all of your lives, utilizing communication skills by working with your peers to achieve a common goal. From my personal experience, currently employed by a Fortune 15 company, collaboration is key to my success in business. In my work, we are provided a task, usually in the form of sales goals, and we as employees communicate and collaborate to create an environment where these goals are attainable. The goal of today is to communicate and collaborate as a group to reach a common goal of representing your birthday data on a box plot."

3. Set 5 minutes

Do Now -

In the Do Now (*See instructional resources and materials*), students prepare for the discussion and activity developing procedural fluency by using celebrities birthday month to find the five number summary (**L5.i**).

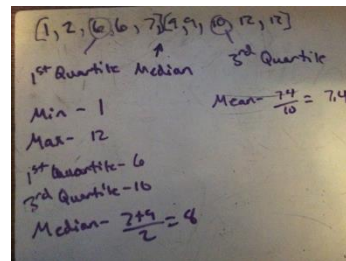
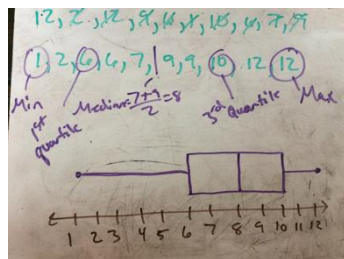
4. Instruction

Modeling 5 minutes

Based on the celebrity data displayed during the Do Now, I will represent the five number summary on a box plot. I will model the following when representing the five number summary on the box plot to support students in the discussion and activity;

- “Median birthday is the birthday in which half of the celebrity's birthdays are before the individual, and half the celebrity's are after the individual (Ann Frank)”
- “Minimum birthday is the first birthday of the year (MLK)”
- “Maximum birthday is the last birthday of the year (LeBron James)”
- “1st quartile, a quarter of the birthdays are within this time frame, 3 quarters is after (Helen Keller)”

“3rd quartile, a quarter of the birthdays are after the third quartile, 3 quarters is before (Drake)”



Input 5 minutes

I will challenge students to think about their ideas, defend them, modify and articulate them in real time. This tends to mirror what often happens in the real world; in business, institutions, and politics. Below are some keys to facilitate effective classroom discussions.

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- Teach nonverbal responses and facial expressions
- Predict and plan for possible tangents, elaborations, and connections to student lives

Activity 25 minutes

I will give students six minutes to discuss how they will find the five number summary and represent the data on a box plot (L5.ii). After the six minutes, the students and I will head outside where students will engage in the activity (L5.iii) (See instructional resources and materials).

6. Closure 5 minutes

Once students have created the human box plot, I will ask the following questions (L5.iv):

How can working and communicating with your peers be beneficial outside of math class?